IFW

Docket No.: 1254-0321PUS1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Takaji WAKITA et al.

Application No.: 10/589,902 Confirmation No.: N/A

Filed: August 17, 2006 Art Unit: N/A

For: NUCLEIC ACID CONSTRUCT CONTAINING FULLLENGTH GENOME OF HUMAN HEPATITIS C VIRUS, RECOMBINANT FULLLENGTH VIRUS GENOME-REPLICATING CELLS HAVING THE NUCLEIC ACID CONSTRUCT TRANSFERRED THEREINTO AND METHOD OF PRODUCING HEPATITIS C VIRUS PARTICLE

Examiner: Not Yet Assigned

LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Subsequent to the filing of the above-identified application on August 17, 2006, attached hereto is an English Translation of the International Preliminary Report on Patentability issued by the International Bureau on behalf of the International Searching Authority. Please make this document of record for the above-identified application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Dated: December 13, 2006

Respectfully submitted,

By_____
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Attachment(s)

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF TRANSMITTAL
OF COPIES OF TRANSLATION
OF THE INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY
(CHAPTER I OR CHAPTER II
OF THE PATENT COOPERATION TREATY)

(PCT Rules 44*bis*.3(c) and 72.2)

To:

HIRAKI, Yusuke
Kamiya-cho MT Bldg. 19F
3-20, Toranomon 4-chome
Minato-ku, Tokyo
1050001
JAPON

Date of mailing *(day/month/year)* 28 September 2006 (28.09.2006)	
Applicant's or agent's file reference PH-2372-PCT	**IMPORTANT NOTIFICATION**
International application No. PCT/JP2005/003232	International filing date *(day/month/year)* 21 February 2005 (21.02.2005)
Applicant TOKYO METROPOLITAN ORGANIZATION FOR MEDICAL RESEARCH et al	

1. **Transmittal of the translation to the applicant.**

☑ The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).

☐ The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

2. **Transmittal of the copy of the translation to the designated or elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

3. **Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

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Authorized officer

Yoshiko Kuwahara

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference PH-2372-PCT	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/JP2005/003232	International filing date *(day/month/year)* 21 February 2005 (21.02.2005)	Priority date *(day/month/year)* 20 February 2004 (20.02.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TOKYO METROPOLITAN ORGANIZATION FOR MEDICAL RESEARCH		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

   - ☒ Box No. I — Basis of the report
   - ☐ Box No. II — Priority
   - ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV — Lack of unity of invention
   - ☒ Box No. V — Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI — Certain documents cited
   - ☐ Box No. VII — Certain defects in the international application
   - ☐ Box No. VIII — Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 19 September 2006 (19.09.2006)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Yoshiko Kuwahara e-mail: pt07@wipo.int

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

	Date of mailing *(day/month/year)*
Applicant's or agent's file reference PH-2372-PCT	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2005/003232	21.02.2005	20.02.2004

International Patent Classification (IPC) or both national classification and IPC

Applicant
TOKYO METROPOLITAN ORGANIZATION FOR MEDICAL RESEARCH

1. This opinion contains indications relating to the following items:

- ☒ Box No. I — Basis of the opinion
- ☐ Box No. II — Priority
- ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV — Lack of unity of invention
- ☒ Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI — Certain documents cited
- ☐ Box No. VII — Certain defects in the international application
- ☐ Box No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP	Authorized officer
Facsimile No.	Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/003232

Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☒ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☒ in computer readable form

c. time of filing/furnishing

☐ contained in the international application as filed.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☒ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/003232

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-16, 19-25	YES
	Claims	17, 18, 26	NO
Inventive step (IS)	Claims		YES
	Claims	1-26	NO
Industrial applicability (IA)	Claims	1-26	YES
	Claims		NO

2. Citations and explanations:

Document 1: Hepatitis C Virus-like Particles Induce Virus-specific Humoral and Cellular Immune Responses in Mice, (M. Lechmann, et al.), Hepatology, 2001, Vol. 34, pages 417-423

Document 2: JP, 2002-171978, A (Tokyo Metropolitan Organization for Medical Research), 18 June, 2002 (18.06.02), full text (Family: none)

Document 3: Inducible System in Human Hepatoma Cell Lines for Hepatitis C Virus Production, (S.P. Lim, et al.), Virology, 2002, Vol. 303, pages 79-99

Document 4: Selectable Subgenomic and Genome-length Dicistronic RNAs Derived from an Infectious Molecular Clone of the HCV-N Strain of Hepatitis C Virus Replicate Efficiently in Cultured Huh7 Cells, (M. Ikeda, et al.), J. Virol., 2002, Vol. 76, pages 2997-3006

The subject matters of claims 17, 18 and 26 do not appear to be novel or to involve an inventive step in view of document 1 cited in the ISR.

Document 1 mentions that HCV-like particles containing the core, E1 and E2 can induce liquid immunity.

Considering that the phrase, "its portion", in claims 17 and 18, and the antibody described in claims 2 and 6, do not clearly specify antigens, the subject matters of the said claims are not distinguishable from the invention described in document 1.

The subject matters of claims 1-26 do not appear to involve an inventive step in view of documents 1-4 cited in the ISR.

It is considered that document 2 describes the genome of hepatitis C virus of genotype 2a. It is considered that document 3 mentions that, by transforming host cells by using replicon RNA where the genome of hepatitis C virus of genotype 1b is under control of a tetracycline-inducible promoter, infectious hepatitis C virus particles and cell strains capable of releasing such virus particles on a stable basis were obtained. It is considered that document 4 mentions that, by introducing a genome of hepatitis C virus at a downstream point in relation to an IRES sequence and a marker gene, the said genome can be replicated in host cells.

In view of the foregoing, a person skilled in the art could have easily conceived of the idea of using replicon RNA where a genome of hepatitis C virus of genotype 2a is under control of a preferred regulatory sequence to transform host cells, whereby infectious hepatitis C virus particles and a cell strain capable of releasing such virus particles on a stable basis are obtained.

Therefore, a person skilled in the art could have introduced the genome of the said hepatitis C virus at a downstream point in relation to an IRES sequence and a marker gene, referring to the description in document 4; produced a vaccine using the obtained virus particles, referring to the

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

description in document 1; and produced a virus vector using the said replicon RNA, as required.

It is not considered that the subject matters of the above claims would produce a particular effect.

The subject matters of claims 1-5 do not appear to involve an inventive step in view of documents 2 and 4 cited in the ISR.

It is considered that document 2 describes the genome of hepatitis C virus of genotype 2a. Document 4 mentions that, by introducing a genome of hepatitis C virus at a downstream point in relation to an IRES sequence and a marker gene, the said genome can be replicated in host cells.

A person skilled in the art could have easily conceived of the idea of introducing the genome of hepatitis C virus of genotype 2a at a downstream point in relation to an IRES sequence and a marker gene to replicate the said genome in host cells.

It is not considered that the subject matters of the above claims would produce a particular effect.

Docket No.: 1254-0321PUS1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Takaji WAKITA et al.

Application No.: 10/589,902 | Confirmation No.: N/A

Filed: August 17, 2006 | Art Unit: N/A

For: NUCLEIC ACID CONSTRUCT CONTAINING FULLLENGTH GENOME OF HUMAN HEPATITIS C VIRUS, RECOMBINANT FULLLENGTH VIRUS GENOME-REPLICATING CELLS HAVING THE NUCLEIC ACID CONSTRUCT TRANSFERRED THEREINTO AND METHOD OF PRODUCING HEPATITIS C VIRUS PARTICLE | Examiner: Not Yet Assigned

LETTER SUBMITTING ADDITIONAL DOCUMENTS FOR ENTERING NATIONAL PHASE FOR A PCT APPLICATION

MS PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Under the provisions of 27 C.F.R. 1.495, attached hereto are the following additional items necessary for entering the national phase in connection with the above-identified PCT international application.

☐ Attached is a copy of the Notification of Missing Requirements (371 Formalities Letter).

☒ Attached is the Executed Declaration and Power of Attorney ☒ Original ☐ Photocopy.

☐ The specification attached to the executed Declaration and Power of Attorney is a true copy of the specification that was filed in the U.S. Patent and Trademark Office on

August 17, 2006, including any amendments thereto (if applicable) filed on even date therewith.

☒ The undersigned hereby declares that "Attorney Docket No. 1254-0321PUS1" on page 1 of the attached Inventors' Declaration corresponds to Appl. No.10/589,902 filed August 17, 2006 entitled "NUCLEIC ACID CONSTRUCT CONTAINING FULLLENGTH GENOME OF HUMAN HEPATITIS C VIRUS, RECOMBINANT FULLLENGTH VIRUS GENOME-REPLICATING CELLS HAVING THE NUCLEIC ACID CONSTRUCT TRANSFERRED THEREINTO AND METHOD OF PRODUCING HEPATITIS C VIRUS PARTICLE."

☐ Attached is an English language translation of the above-identified application that was filed in a foreign language, which should be used as the copy for examination purposes.

See the attached Translator's Verification; or

The undersigned states that the English translation attached hereto is a true and correct translation of the application as originally filed in a foreign language.

☐ Attached are **0** sheet(s) of drawings. Please substitute these replacement drawings for the corresponding - sheet(s) of drawings on file in the above-identified application.

☐ Attached are substitute claims commencing on a separate sheet in accordance with 37 C.F.R. § 1.75(h).

☐ Attached is a substitute abstract commencing on a separate sheet in accordance with 37 C.F.R. § 1.72(b).

☐ Attached is a substitute specification that complies with 37 C.F.R. § 1.52. The substitute specification does not contain new matter.

☐ Attached is a preliminary amendment.

☐ Applicant claims small entity status under 37 C.F.R. § 1.27.

☐ Attached is a Supplemental Application Data Sheet (ADS).

☐ Submitted concurrently herewith under separate cover for recording is an Assignment.

☐ Attached is a Petition for Extension of Time.

☒ The Government Filing Surcharge for late filing of oath and/or declaration in the amount of $130.00 in accordance with 37 C.F.R. §§ 1.494 and 1.492 was previously paid for concurrently with the filing of the application on August 17, 2006.

☐ Attached hereto is the fee transmittal listing the required fees.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to our Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

Dated: December 13, 2006

Respectfully submitted,

By _____
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